

REMARKS/ARGUMENTS

The amendment adds claims 39 and 40 to the application. Support may be found, among other places, in the published application page 10, paragraph [0052], and page 11, paragraph [0058]. Claims 1–40 are pending in the application, of which claim 38 has been previously withdrawn from consideration. Applicants respectfully request the rejections of the pending claims be reconsidered and withdrawn in light of the remarks that follow.

A. The Rejection of Claims 1-5, 8-10 and 29-32 under § 103(a) Is Addressed

The Office maintains the rejection of claims 1–5, 8–10, and 29–37 (of which claims 1, 3 and 29 are independent) under 35 U.S.C. § 103(a) over U.S. Patent No. 6,426,615 to *Mehta* in combination with U.S. Patent No. 5,744,366 to *Kricka et al.* This rejection is respectfully traversed, because the Office has not established a *prima facie* case of obviousness.

In order to establish a *prima facie* case of obviousness, the Office must show some suggestion or motivation to combine the reference teachings. See MPEP § 2143.01. The mere fact that references can be combined does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. See *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990). Also, if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. See *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984). In this case, the desirability of the combination of *Mehta* and *Kricka* is not found in the references or knowledge generally available to one of skill in the art, and furthermore, such a combination would render the device in *Mehta* unsatisfactory for its intended purpose.

Independent claims 1, 3 and 29 all include a conduit with cross-sectional area of less than about $1\ \mu\text{m}^2$. In contrast, Coulter counters like the ones described in *Mehta* had holes with cross-sectional areas of greater than $1\ \mu\text{m}^2$, and typically exceeded $100\ \mu\text{m}^2$. See *Metha*, col. 7, lines 35–37. The larger sized holes were not simply a design choice: Boring micron sized holes into substrates was very difficult. As noted in *Metha*, mechanical drill bits were only feasible for making holes with diameters down to 350 microns. See *Metha*, col. 9, line 64, to col.

10, line 2. That translated into a hole with a cross-sectional area of over $96,000 \mu\text{m}^2$. It was also difficult to bore micron-sized holes with other methods mentioned by *Metha*, such as laser and ultrasonic drilling, dry and wet etching, and ion-beam milling.

The present invention solves the problem of fabricating small apertures by forming a conduit around a microlithographically created mold. The lateral conduit may be joined horizontally to the surface of the substrate, instead of being bored vertically through the substrate. The present fabrication methods were neither described nor suggested by *Metha*, which only described boring holes into substrates.

Because *Metha* did not describe or suggest a conduit with cross-sectional area of less than about $1 \mu\text{m}^2$, the Office introduces *Kricka*, which described elastomeric channels used in cell motility measuring devices that were unrelated to Coulter counters. The channels in *Kricka* had a wide range of cross-sectional dimensions, on the order of 0.1 to 1000 μm . See *Kricka*, col. 8, line 51. The Office cites the low end of the range to supply the element of a conduit with cross-sectional area of less than about $1 \mu\text{m}^2$, and states the motivation to combine *Kricka* with *Metha* comes from the knowledge possessed by one of skill in the art that smaller cross-sectional areas are preferred to detect particles of smaller size.

Applicants respectfully disagree with the Office's stated motivation. As noted above, making Coulter counter holes with cross-sectional areas of less than about $1 \mu\text{m}^2$ is not a trivial matter of design choice. One of skill in the art understood the great difficulty boring such small holes into substrates, and nothing in *Metha* or *Kricka* suggests otherwise. Furthermore, nothing about the cell motility measuring devices in *Kricka* suggested the elastomeric channels used in those devices could replace the Coulter counter holes in *Metha*. The devices in *Kricka* did not even have sensors for measuring changes in the electrical properties, and relied exclusively on visual observations for cell measurements. One of skill in the art reading *Kricka* would find no suggestion to combine the reference with *Metha*, which teaches devices that operate on an entirely different measurement principle. To do so would be an improper hindsight combination based on the teachings of the present invention. See *In re Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but

powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references”).

In fact, the elastomeric channels in *Kricka* would render the device in *Metha* unsatisfactory for its intended purpose. The hard substrate that surrounded the hole in *Metha* provided stability for the planar electrodes 46, 48, 50, 52 at the heart of the invention. See *Metha*, col. 15, lines 20–38. These planar electrodes could not be formed if the hard substrate were replaced with an elastomeric material. Moreover, even if the electrode could somehow be formed on the elastomeric material, the constant motion would render them unsatisfactory for providing information about the shapes of particles. It is well settled that if a modification would render the prior art invention unsatisfactory for its intended purpose, then there can be no suggestion or motivation to make the proposed modification. See MPEP § 2143.01.

Since there is no suggestion of the desirability to combine *Metha* and *Kricka*, and because such a combination would render the device in *Metha* unsatisfactory for its intended purpose, the Office has failed to establish a case of *prima facie* obviousness. Accordingly, withdrawal of the rejection of claims 1–5, 8–10, and 29–37 under § 103(a) over *Mehta* in combination with *Kricka* is respectfully requested.

B. The Rejection of Independent Claims 11 and 22, and Dependent claims 12-21 and 23-28 under § 103(a) Is Addressed

The Office also maintains the rejection of claims 11–28 (of which claims 11 and 22 are independent) under 35 U.S.C. § 103(a) over *Mehta* and *Kricka*. This rejection is respectfully traversed.

Independent claims 11 and 22 both include a conduit that is formed at least in part by an elastomeric material. Coulter counters like the ones described in *Mehta* were formed by boring a hole through a hard substrate, and did not use elastomeric materials. Moreover, forming the hole in *Metha* out of an elastomeric material would have made the device unsatisfactory for its intended purpose, because a hard substrate was needed to fix the positions of the planar electrodes.

Applicants respectfully disagree that a motivation to combine *Metha* and *Kricka* can be found in the description of transparent elastomeric materials in *Kricka*. Many of the substrates in *Metha*, such as glass, were already capable of being transparent. See *Metha*, col. 10, lines 11–17. One of skill in the art would not have had the motivation to replace a transparent substrate in *Metha* with a transparent elastomeric material from *Kricka*, simply because the elastomer was transparent. Thus, the Office has failed to establish a case of *prima facie* obviousness because there is no suggestion or motivation to combine *Metha* with *Kricka*, and the combination would render the device in *Metha* unsatisfactory for its intended purpose.

For at least these reasons, there is insufficient motivation to combine *Metha* with *Kricka* to make the inventions of claims 11 and 22. Accordingly, withdrawal of the rejection of claims 11–28 under § 103(a) over *Mehta* in combination with *Kricka* is respectfully requested.

C. Interview Request

Applicants believe that an interview would be helpful in expediting prosecution of the application. Accordingly, a telephonic interview is requested at the Examiner's earliest convenience. Please contact the undersigned at 303-571-4000 to schedule a time for the interview.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Appl. No. 10/056,103
Amdt. dated February 7, 2005
Reply to Advisory Action of December 23, 2004

PATENT

Please charge Deposit Account No. 24-1430 the \$60 fee for a one-month extension of time under 37 CFR 1.17(a)(1). Should any additional extension of time be required, please consider this a petition and charge the required fee to the above-identified deposit account.

Respectfully submitted,



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